



**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Alexander D. S. ELLIN et al.

Group Art Unit: 3742

Application No.: 10/500,716

Examiner: S. HEINRICH

Filed: July 6, 2004

Docket No.: 120299

For: LASER MARKING

**REPLY BRIEF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The following remarks are directed to the new points of argument raised in the Examiner's Answer dated November 21, 2008.

Appellants herein respond to three issues noted on pages 6 and 7 of the Examiner's Answer. Specifically, (1) None of the applied references disclose or suggest a method or an apparatus that combines both a metrological scale and ultra-short output pulses that are used to form precision markings, (2) Neev is non-analogous art and (3) improper hindsight reasoning was used.

- (1) **NONE OF THE APPLIED REFERENCES DISCLOSE OR SUGGEST A METHOD OR AN APPARATUS THAT COMBINES BOTH A METROLOGICAL SCALE AND ULTRA-SHORT OUTPUT PULSES FOR PRECISION MARKINGS**

Pages 12-18 of Appellants' August 25, 2008 Appeal Brief argues in detail why none of the applied references disclose or suggest a method or an apparatus that combines both a

metrological scale and ultra-short output pulses that are used to form precision markings. In particular, in section VII.B.1 of the Appeal Brief, Appellants explain that the references (Appellants' admitted prior art (AAPA) and DE 19608937 (DE'937)) that do disclose a metrological scale fail to suggest using ultra-short pulses, and in section VII.B.2. of the Appeal Brief, Appellants explain that the only reference (Neev, U.S. Patent No. 6,156,030) that mentions ultra-short pulses is directed to a biomedical application.

In response, pages 6 and 7 of the Examiner's Answer appears to assert that, because Neev discloses using an ultra short pulse laser in a biomedical application, and because DE'937 uses the phrase "pulses of a clearly shorter duration can be used", it would have been obvious to combine AAPA and DE'937's metrological scale with ultra-short output pulses as suggested by Neev in order to form precision markings. Appellants disagree with this assertion for several reasons, some of which are provided below.

(1) AAPA and DE'937 are directed to metrological scales and Neev is directed to a biomedical application (e.g., laser eye surgery). Metrological scales and laser eye surgery are clearly not the same, and the concerns in making a metrological scale are not the same as the concerns involved in laser eye surgery.

(2) "Under the correct analysis, any need or problem known in the field of endeavor at the time of the invention and addressed by the patent [or application at issue] can provide a reason for combining the elements in the manner claimed." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, \_\_\_, 82 USPQ2d 1385, 1391 (2007), *citing Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966). Laser eye surgery (Neev) is not reasonably pertinent to metrological scales because laser eye surgery logically would not have commended itself to an inventor's attention in considering metrological scales (AAPA and DE'937) as a whole.

(3) DE'937 does state that "pulses of a clearly shorter duration can be used". However, simply quoting this phrase ignores DE'937's remaining disclosure. DE'937

explicitly wants melting to occur, which cannot occur by using ultra short pulses or Neev's ultra short pulse laser.

DE'937 uses an Excimer laser that produces pulses of approximately 20 ns (page 2, line 20 - page 3, line 2 of the translation provided with the November 17, 2008 Patent Office communication) and the laser pulse is used to melt the surface of the substrate (page 3, line 21 - page 4, line 7, specifically page 3, lines 23-25). The re-solidification of the melt provides a region of different surface roughness that has different optical properties to the surrounding material. Although DE'973 mentions that pulses of a much shorter duration can be used, the duration is selected in order to avoid heat dissipation from the process area (i.e., ensure that melting effect occurs efficiently) (page 4, lines 4-7).

As disclosed in DE'937, the laser pulse that is used to form scale marks must always be sufficiently long so that melting occurs. Otherwise, the re-solidification stage would not happen. Therefore, the Examiner's emphasis on DE'937's statement that "pulses of a clearly shorter duration can be used" is misplaced given that DE'937 still wants melting to occur, which cannot occur with ultra short output pulses or Neev's ultra short pulse laser.

Therefore, it is improper to simply assert that ultra short pulse lasers exists, and that because DE'937 states that "pulses of a clearly shorter duration can be used", it would have been obvious to use an ultra short pulse laser given that DE'937 explicitly does not want to use ultra short output pulses.

(4) The Examiner's Answer explanation as to why it would have been obvious to combine both a metrological scale and ultra-short output pulses in order to form precision markings is flawed.

The Examiner's Answer asserts that the "use of the ultra-short pulse laser ablation, with no melting step, for forming precision markings would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art in order to provide

marks and prevent energy dissipation into the working because preventing the dissipation of energy into the workpiece prevents physical change of the substrate."

The obviousness rejection is not supported with a clear and explicit articulation of the reasons why the claimed invention allegedly would have been obvious (including a reasonable rational as to why prior art references would have been combined or modified). MPEP §§2141(III) and 2142, citing *KSR*. "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.*, quoting *KSR*, in turn quoting the Federal Circuit's *In re Kahn* decision with approval.

In addition, this reasoning set forth in the Examiner's Answer is not supported by the references. The above statement does not explain why forming precision markings with no melting step would have been obvious or desirable given that the references directed to metrological scales explicitly want melting. DE'937 explicitly wants melting, and thus wants to physically change the substrate of a metrological scale.

**(2) NEEV IS NON-ANALOGOUS ART**

Pages 14-15 of Appellants' Appeal Brief argues that Neev, which is directed to a biological application, is non-analogous art to metrological scales. In addition, Neev cannot reasonably be from the same field of endeavor as Appellants' invention or the other applied art simply because Neev uses a laser.

Page 7 of the Examiner's Answer responds by stating that Neev pertains to laser ablation of material and citing Neev's classification at the U.S. Patent and Trademark Office.

Appellants do not agree that a mere classification at the U.S. Patent and Trademark Office can make metrological scales (AAPA and DE'937) and a biomedical application (e.g., laser eye surgery) (Neev) from the same field of endeavor. Common sense would dictate that metrological scales and laser eye surgery are not the same, and that one skilled in the art of

metrological scales would not simply look to laser eye surgery in order to use ultra short pulses.

Otherwise, it would have been obvious to look to any field or technology that uses lasers in order to improve a metrological scale. Such cannot be correct for an obviousness analysis.

**(3) IMPROPER HINDSIGHT REASONING WAS USED**

Pages 15 of Appellants' Appeal Brief argues that improper hindsight reasoning was used.

Page 7 of the Examiner's Answer asserts that "Neev pertains to well know material modification processing and removal comprising laser ablation." This statement again does not explain why a reference that relates to a biomedical application (Neev) was used, or explain what made the Examiner consider using such a reference (instead of others) with references directed to a metrological scale. This statement also does not explain why, given the vast application of lasers, Neev was applied without using knowledge gleaned only from Appellants' disclosure (which is impermissible hindsight).

\* \* \* \* \*

CONCLUSION

The Honorable Board is requested to reverse the rejections set forth in the Final Rejection and direct the Examiner to pass this application to issue.

Respectfully submitted,



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